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Henriëtte de Swart, *Expression and interpretation of sentential negation: An OT typology* (Studies in Natural Language and Linguistic Theory 77). Dordrecht: Springer, 2010. Pp. xvii + 279.

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This very rich and comprehensive monograph presents a study of the expression of negation in a large array of languages, mostly but not exclusively from the Indo-European family. Henriëtte de Swart's aim is to provide an analysis of the cross-linguistic variation found with respect to negation, using a model based on Optimality Theory (OT). The choice of this model is motivated by its applicability to the syntax–semantics interface, that is, it is said to offer a unified perspective on both the syntactic and semantic contributions of negation, or the speaker (production) and hearer (interpretation) contributions in negative forms/meanings.

As such, the book embarks on a clearly innovative enterprise, which encourages the reader to view the strikingly diverse phenomena involved in negation from a different perspective. Wide-scope OT accounts are – to my knowledge – extremely scarce; and although recent contributions to the study of negation, both from a syntactic and from a semantic point of view, have added to our understanding of the phenomenon, few researchers have attempted to tackle the complex issue of the syntax–semantics interface of negation, especially when working within a large-scale typological investigation.

De Swart's book is divided into six chapters and a conclusion. The first two chapters provide the empirical and formal background. Chapter 1, 'Negation in a cross-linguistic perspective', presents an overview of the central issues of negation. It provides an in-depth discussion of typological and diachronic variation in sentential negation. It also introduces the much-debated question of the nature of negative expressions. In the existing literature, negative expressions have been assigned various interpretations, having been analysed as negative quantifiers, indefinites in the scope of negation, or even as ambiguous between the two readings (see the references in the book). De Swart argues that 'n-words' (Laka 1990), which appear in

negative concord structures, are inherently negative, unlike negative polarity items (NPIs). This is supported by the fact that in many languages, n-words are ‘self-licensing’, that is, they can survive without a negative marker. She considers further evidence from (the fruitful topic of) fragment answers. The fact that n-words but not NPIs can occur in fragment answers is taken as a decisive argument in favour of the negative status of n-words. The author thus assumes that n-words and negative quantifiers (e.g. *nobody*) are uniformly interpreted as negative indefinites of the kind $\neg\exists$. Her strong claim is that there is no lexical ambiguity within the array of negative expressions, but that ‘the distinctions between double negation and negative concord languages reside solely in the grammar’ (36). The distinction between negative concord and double negation interpretation is accounted for by a mechanism which lies at the syntax–semantics interface, following the HPSG (Head-driven Phrase Structure Grammar) analysis of de Swart & Sag (2002). In a nutshell, the interpretation of (multiple) negative quantifiers can proceed either by means of iteration of monadic quantifiers, which then leads to a double negation interpretation, or by resumption, a process which builds a (unique) polyadic quantifier that binds the corresponding number of variables, giving a negative concord interpretation.

Chapter 2, ‘Expressive and interpretive optimization’, lays the foundation for the theoretical framework. Anticipating that many readers will lack familiarity with the workings of OT, the chapter first introduces the basic notions of standard OT theory. OT is grounded in a theory of connectionist networks, which assumes that ‘the brain [is] a massively parallel computer consisting of billions of processors (neurons)’ (56), which perform computations on input patterns to yield output patterns. In the domain of linguistics, the input will be linguistic structures, which are evaluated by a set of well-formedness constraints. These constraints are (i) ranked and (ii) universal, cross-linguistic variation being due to the re-ranking of the constraints. In order to account for the variation, not only in the expression of negation but also in its interpretation, de Swart adopts a bidirectional model of OT, which builds, on the one hand, a model of expressive (syntactic) optimization and, on the other hand, a model of interpretive (semantic) optimization. The bidirectional model makes it possible to take into account the interface between the syntax and semantics of negation. The book, then, makes an original contribution in proposing an analysis which, due to the nature of the model adopted, considers expression (form) and interpretation (meaning) together.

Chapters 3, 4 and 5 discuss the application of the proposed model to negation. Chapter 3 examines the notion of ‘Markedness in negation’. The author points out that ‘negation is marked in the sense that the expression of negation involves special grammatical means, whereas the expression of affirmation does not’ (76). On the assumption that these grammatical means, i.e. the form of a negative utterance, need to correspond to semantic

properties of negation, de Swart introduces the first set of constraints: F_{NEG} and $*NEG$. F_{NEG} ('faithfulness to negation') expresses the need for an input (meaning) to be reflected in the output (form). $*NEG$ ('avoid negation in the output') is a balancing markedness constraint required by the model. These constraints capture the intuition that negation is a marked phenomenon, in both form and meaning. It is immediately clear, even to readers not familiar with the OT framework, that these two constraints are conflicting requirements on negation. Therefore, only a strict ranking $F_{NEG} \gg *NEG$ will be able to rule in negative utterances.

Chapter 3 closely examines the relation between meaning and form, one of the crucial motivations behind the whole enterprise. Although other frameworks have provided various (partial) analyses of the relation between the meaning of negation and the form that it takes in different languages, the syntax–semantics interface remains a complex issue. Most generative accounts (still) suffer from the non-trivial drawback that syntactic and semantic formalisms have taken different roads, which make them difficult to reconcile entirely. Recent nanosyntactic approaches have, in my view, tried in some very radical way to bridge the gap (see, for example, Starke 2009). The bidirectional OT approach adopted by the author is another promising enterprise of this kind. Obviously, the framework as such relies on an (infinite) set of potential candidates which associate a form and a meaning. Usually, attention is narrowed down to those candidates which – intuitively – have the best chance to win out. The bidirectional approach considers the chances of a given form with respect to an optimal recoverability of the intended meaning. Therefore both the form and the meaning have to be taken into account, in that the candidates compete not only for the optimal form but also for the optimal realization that the relevant form provides for a given meaning. Using this formalism, de Swart proposes a coherent typology of the placement of sentential negation markers in natural languages. The chapter also discusses interesting questions with respect to language acquisition and language change in the OT framework.

Chapter 4 tackles the controversial issue of 'A typology of negative indefinites'. As stated earlier, the author examines languages with a single negative expression (D(ouble)N(egation) languages) and languages with multiple expressions yielding single negation (N(egative)C(oncord) languages). Having argued for a unified treatment of negative expressions in these two types of languages, she proposes relevant constraints, and shows that the adequate re-ranking of these constraints accounts for a DN versus NC reading. In contrast to previous approaches (see, for example, Zeijlstra 2004) which locate the variation in the lexicon, in the form of different (syntactic) features on the negative markers and negative expressions, the advantage claimed for the OT approach is that it avoids such lexical ambiguity and models these variations as resulting from sheer grammatical constraints, in the form of re-rankings.

Chapter 5 examines the interactions between ‘Sentential negation and negative indefinites’. The author uses Haspelmath’s (1997) typology of co-occurrence patterns, which distinguishes between Type I, in which the negative marker is obligatorily present (strict NC languages, such as Polish or Hungarian), Type II, where the co-occurrence is forbidden (Dutch, English), and Type III languages, which exhibit an asymmetry between the preverbal and the postverbal negative expressions (nonstrict NC languages, such as Italian). The typology is carefully explicated and analysed by means of a set of constraints and re-rankings, and the author gives a detailed analysis of negation in different languages in this framework. However, the approach adopted presents two challenges. The first involves problematic cases of Type I and, to some extent, Type III languages. Given that an NC reading obtains due to the polyadic nature of the quantifier and the resumption mechanism which enables to combine them (see Chapter 1), the problem lies in the addition of a negative marker which cannot be analysed as a variable binding operator. Here, the author draws again on the analysis proposed in de Swart & Sag (2002), which treats a sentential negation marker as an expression of negation with zero adicity, which will then participate in the resumption mechanism but will not change the adicity of the resulting operator. The negative marker is thus ‘absorbed’ and does not contribute individual negation.

Such an approach involves a ‘pre-syntactic’ treatment of negative expressions, assigning them semantic values prior to them being introduced into the optimization process. One might wonder whether, at some level, such an analysis isn’t also required for the syntactic values of the string under scrutiny (concerning, for example, syntactic licensing, and argument structures). The asymmetry in the treatment does not seem justified under a syntax–semantics interface oriented analysis. Basically, it seems to presuppose some ‘crypto-syntactic’ processes, a problem the author does not address at all. While her approach chooses to be neutral from the point of view of syntactic theory, this choice also includes being exclusively surface-oriented, which bans any resort to covert or empty negative elements.

The second challenge concerns the necessity to introduce additional constraints to account for the restrictions in Type I languages. Some of these constraints, such as MAXSN (‘negative clauses must bear a marker of sentential negation’, 169) have to be expressed as ‘soft’ constraints, in that their ranking is not strictly hierarchic with respect to others. The question is then how to avoid the very ad-hoc nature of these constraints. Although the author does not address the problem directly, one answer could be that all constraints are expressions of the model, and thus based on empirical observations; the re-ranking system would theoretically allow all constraints to be present in each evaluation, their relative weight being the varying factor.

Finally, Chapter 6, ‘Double negation in negative concord languages’, discusses cases of DN reading in NC languages. Their occurrence – whenever

attested – is accounted for by the semantics of *n*-expressions and the possibility of having an iterative interpretation of quantifiers determined by an (optional) re-ranking of the constraints. Although the author mentions that special conditions – such as intonation, specific structures or pragmatic factors – will favour a DN reading, it is not her intention to discuss these. Again, the focus of the discussion is on the internal workings of the OT model as a system of constraints. The fuzzy cases (such as, for example, the possible ambiguities between NC and DN readings in French) are, according to this system, manifestations of intermediate stages of languages. The treatment of these ambiguities requires a slightly more complex version of OT which allows for overlap in the range of the constraints. Such a version is formalized as a (semantic) stochastic version of OT. The author resorts to this more elaborate version only to account for the cases which cannot be handled using a standard version of OT. Nevertheless, the model is powerful enough to express sufficiently weighed predictions concerning the occurrence of negative markers and negative expressions in DN contexts in each type of language.

Chapter 7, ‘Conclusions and further perspectives’, concludes the book and gives a useful summary of the very rich typological survey and the implementation of the model. It also suggests a number of paths in which the proposed framework can be further explored.

For a reader, like myself, whose theoretical background is anchored in some (standard) version of generative grammar, the main question might be as to how the system developed here contributes to explanatory adequacy. Indeed it might appear at first sight (and this is a criticism I have often heard against OT) that the system of constraints and re-rankings offers a very satisfactory typological coverage, but does not provide any strong explanation, apart from an account of the empirical evidence, as to why these rankings should hold. However, a careful reading of the book gives a clear picture of the system as a connectionist approach where grammatical knowledge is modelled not as a set of principles, but as set of ‘universal violable constraints on well-formed linguistic combinations’ (58). De Swart notes that ‘OT is embedded in a broader conception of language as part of our cognitive system and provides a new perspective on universal grammar and typological variation’ (v). Crucially, generative models put the weight on lexical differences, aiming at syntactic uniformity. This stands in contrast to the OT approach developed here, which, using a semantic formalism, claims that there is lexical uniformity but grammatical difference (in the form of a re-ranking of constraints).

In addition to offering this very unique insight into OT, the book has an impressive empirical coverage. It deals with many different languages, exploring the interactions between negative expressions and sentential negative markers, and proposes clear typologies.

Finally, the book is unique in considering the phenomenon of negation from both a syntactic and a semantic point of view. As such, it is a valuable

companion to researchers of all theoretical orientations who are intrigued – and who couldn't be? – by the very many facets of negation in natural language.

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Malte Zimmermann & Caroline Féry (eds.), *Information structure: Theoretical, typological, and experimental perspectives*. Oxford: Oxford University Press, 2010. Pp. xv + 412.

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The book under review reflects the conviction of the editors, Malte Zimmermann & Caroline Féry, that the study of information structure must be 'multi-modular'. Information structure is a domain that mediates between components of grammar, such as syntax, phonology and morphology, and other cognitive domains, including pragmatic reasoning and the update of information states. To understand information structure in its entirety, it is thus necessary to consider aspects of grammar together with the interacting cognitive domains. By combining theoretical, typological and experimental approaches, the book aims to highlight this need, as the editors explain in the introduction.

Besides the introduction, the book contains fourteen contributions and is divided into three parts, as reflected in the subtitle of the book. Part I, 'Topic and focus', contains six theoretically oriented chapters. In 'Second occurrence focus and *Relativized Stress F*' (Chapter 2), Mats Rooth examines sentences containing two foci with nested scopes, one of which is a second occurrence focus. In such sentences, the focus with wider scope is prosodically more prominent than the focus with narrower scope. To explain the observation, Rooth proposes operators that determine at every relevant